## CLAIMS

The claims now in this application are as follows:

1 - 13 (Cancelled)

14. (Currently amended) A method for fabricating microelectromechanical (MEMS) structures in a metal substrate, comprising:

providing ~~an insulating~~ a mask layer on a top surface of a metal wafer;

patterning ~~and etching~~ said ~~insulating~~ mask layer to form a mask defining a MEMS structure; and

deep etching the metal wafer through said mask using metal anisotropic reactive ion etching with oxidation to provide a first cavity corresponding to said MEMS structure in said wafer.

15. (Original) The method of claim 14, wherein said deep etching further includes:

depositing PECVD oxide on all exposed floor and wall surfaces of said cavity in said wafer;

removing the oxide from the floor of said cavity to expose said metal wafer; and further etching the exposed metal wafer.

16. (Original) The method of claim 15, further including:

etching to undercut the exposed wall surfaces of said cavity to produce a released MEMS structure.

17. (Original) The method of claim 16, further including depositing a conductive layer on at least a portion of said mask layer.

18. (Original) The method of claim 14, wherein said patterning and deep etching steps defines a released metal MEMS structure surrounded by a cavity, the process further including:

filling the cavity around and under the released structure with a deposited insulator;

removing the insulating mask layer on said structure in a region where electrical contact is to be made with said structure;

depositing metal to make contact with said structure;

depositing a second insulating layer over said contact metal; and releasing said structure.

19. (Original) The method of claim 14, wherein said deep etching using metal anisotropic reactive ion etching comprises:

alternately and repeatedly applying an oxidation plasma and an etching plasma to said wafer to cyclically oxidize and etch metal exposed through said mask.

20. (Original) The method of claim 19, further including varying said oxidation plasma to change the quality and thickness of oxidation of said metal.

21. (Original) The method of claim 19, further including varying the amount of oxidation and etching performed in each cycle to controllably etch a cavity in said metal wafer and to control the surface roughness of cavity walls.

22. (Original) The method of claim 21, further including controlling the etching of a cavity to produce a released metal structure in said wafer.

23. (Original) The method of claim 22, further including implanting ions in

said released metal structure to change the composition of the metal.

24. (Original) The method of claim 23, wherein the metal of said wafer is titanium, the method further including implanting selected ions in said released metal structure to change the composition of the metal to a selected one of the group consisting of Titanium Carbide, Titanium Boride, and Titanium Nitride.

25. (Original) The method of claim 21, further including controllably etching said cavity to produce substantially vertical cavity walls.

26. (Original) The method of claim 21, further including controllably etching said cavity to produce tapered cavity walls.

27. (Original) The method of claim 14, further including stacking and bonding multiple metal substrates containing MEMS structures.

28. (Original) The method of claim 14, further including enclosing said fabricated MEMS structures to form an enclosed package.

29. (New) A method of fabricating a metal microstructure, comprising:

forming a metal membrane over a cavity in a substrate; and

micromachining the membrane to create a released metal microstructure supported by said substrate.

30. (New) The method of claim 29, wherein forming said membrane includes macromachining said metal substrate to form a cavity covered by said thin membrane.

31. (New) The method of claim 29, wherein forming said membrane comprises bonding a metal foil over said cavity.

32. (New) The method of claim 29, wherein said metal membrane is

titanium, and further including treating said released metal microstructure by ion implantation.

33. (New) The method of claim 29, further including covering said released microstructure with an insulating layer and covering said insulating layer with a patterned conductive layer to form capacitive plates and conductors.

34. (New) The method of claim 29, wherein micromachining the membrane includes:

providing an insulating layer on a top surface of the membrane;

patterning and etching said insulating layer to form a mask defining a microelectromechanical (MEMS) structure; and

etching said membrane through said mask using metal anisotropic relative ion etching.

35. (New) The method of claim 34, wherein etching said membrane includes cycles of alternating oxidation plasma deposition and etching plasma to provide deep metal etching while maintaining feature geometry and size.

36. (New) The method of claim 35, further including controlling the surface roughness of sidewalls of said etched structure by altering the amount of oxidation and of etching in each of said cycles.

37. (New) The method of claim 36, wherein said metal membrane is titanium, and further including treating said released metal microstructure by ion implantation to transform the titanium.